

Appln No. 09/933,035
Amdt date November 4, 2005
Reply to Office action of August 5, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for relaying signaling tones in a communication signal across a network, comprising the steps of:

pre-detecting said tones;

validating at least one of said tones;

processing said communication signal to invalidate said tones in response to said tone pre-detection;

forwarding said processed communication signal across said network; and

~~validating at least one of said tones; and~~

forwarding tone-on signals across said network in response to said validation, wherein the step of processing said communication signal to invalidate said tones comprises shifting frequency of said tone and/or adding an additional tone to said communication signal at a discrete frequency.

2. (Original) The method of claim 1 wherein said tones comprise dual tone signals comprising a low frequency tone group and a high frequency tone group.

3. (Currently Amended) The method of claim 2 wherein the step of processing said communication signal to invalidate said tones further comprises filtering said high frequency tone group.

4. (Cancelled)

5. (Cancelled)

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6. (Original) The method of claim 1 further comprising encoding said processed signal in accordance with an application protocol, wherein said encoded signal is forwarded across said network.

7. (Previously Presented) The method of claim 1 wherein the step of pre-detecting said tones comprises determining characteristic of at least one of said tones and comparing said characteristic to one or more predetermined thresholds, wherein said tone is pre-detected in accordance with said comparison.

8. (Previously Presented) The method of claim 7 wherein the step of determining a characteristic of at least one of said tones comprises determining power of said tone.

9. (Previously Presented) The method of claim 7 wherein the step of determining a characteristic of at least one of said tones comprises determining frequency of said tone.

10. (Previously Presented) The method of claim 1 wherein the step of validating at least one of said tones comprises comparing duration of said tone to a predetermined threshold.

11. (Currently Amended) A tone relay for communicating signaling tones across a network, comprising:

validation logic coupled to a tone detector for pre-detecting tones in an incoming signal;
invalidation logic for processing said incoming signal to invalidate said tones in response to said tone pre-detection; and

an encoder for encoding said processed signal in accordance with an applications protocol, wherein said tone invalidation logic comprises a signal generator for adding an additional tone to said incoming signal at a discrete frequency.

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12. (Original) The tone relay of claim 11 wherein said tones comprise dual tone signals comprising a low frequency tone group and a high frequency tone group.

13. (Currently Amended) The tone relay of claim 12 wherein said invalidation logic further comprises a band stop filter for filtering said high frequency tone group.

14. (Currently Amended) The tone relay of claim 12 wherein said invalidation logic further comprises a band stop filter for filtering said low frequency tone group.

15. (Previously Presented) The tone relay of claim 11 wherein said validation logic analyzes one or more characteristics of a pre-detected tone among the tones to verify tone validity, and wherein a host forwards a tone-on signal across said network in accordance with said tone validation.

16. (Original) The tone relay of claim 15 wherein said validation logic comprises state machine logic for verifying duration of said pre-detected tones, and wherein a host forwards a tone-on signal across said network in accordance with said tone validation.

17. (Original) The tone relay of claim 11 wherein said encoder comprises a voice encoder.

18. (Cancelled)

19. (Currently Amended) A data transmission system, comprising:
a telephony device that outputs a signal; and
a signal processor comprising validation logic coupled to a tone detector for pre-detecting tones in said signal, invalidation logic for processing said signal to invalidate said tones in

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response to said tone pre-detection, and an encoder for encoding said processed signal in accordance with an applications protocol,

wherein said encoder comprises a voice encoder, and

wherein said tone invalidation logic comprises a signal generator for adding an additional tone to said incoming signal at a discrete frequency.

20. (Original) The data transmission system of claim 19 wherein said tones comprise dual tone signals comprising a low frequency tone group and a high frequency tone group.

21. (Currently Amended) The data transmission system of claim 20 wherein said invalidation logic further comprises a band stop filter for filtering said high frequency tone group.

22. (Currently Amended) The data transmission system of claim 20 wherein said invalidation logic further comprises a band stop filter for filtering said low frequency tone group.

23. (Previously Presented) The data transmission system of claim 19 wherein said validation logic analyzes one or more characteristics of a pre-detected tone among the tones to verify tone validity, and wherein a host forwards a tone-on signal across said network in accordance with said tone validation.

24. (Original) The data transmission system of claim 23 wherein said validation logic comprises state machine logic for verifying duration of said pre-detected tones, and wherein a host forwards a tone-on signal across said network in accordance with said tone validation.

25. (Cancelled)

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26. (Cancelled)

27. (Currently Amended) A tone relay for communicating signaling tones across a network, comprising:

means for pre-detecting tones in an incoming signal;

means for invalidating said tones in response to said tone pre-detection; and

means for encoding the incoming signal having invalid tones in accordance with an applications protocol, wherein said means for invalidating said tones comprises a signal generator for adding an additional tone to said incoming signal at a discrete frequency and/or means for shifting frequency of said tone.

28. (Original) The tone relay of claim 27 wherein said tones comprise dual tone signals comprising a low frequency tone group and a high frequency tone group.

29. (Currently Amended) The tone relay of claim 28 wherein said means for invalidating said tones further comprises a band stop filter for filtering said high frequency tone group.

30. (Currently Amended) The tone relay of claim 28 wherein said means for invalidating said tones further comprises a band stop filter for filtering said low frequency tone group.

31. (Previously Presented) The tone relay of claim 27 further comprising means for analyzing one or more characteristics of a pre-detected tone to verify tone validity, and means for forwarding a tone-on signal across said network in accordance with said tone validation.

32. (Original) The tone relay of claim 27 wherein said encoding means comprises a voice encoder.

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33. (Cancelled)

34. (Cancelled)

35. (Cancelled)

36. (Currently Amended) The tone relay of claim 27 further comprising means for buffering said incoming signal and wherein said means for invalidating said tones further comprises means for re-transmitting buffered signal in accordance with pre-detection of said tones.